

WRIGHT (J)

## SUBGLOTTIC NEOPLASMS.

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BY  
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OF NEW YORK.

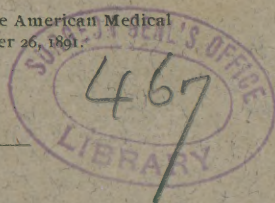
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## SUBGLOTTIC NEOPLASMS.

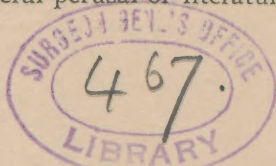
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From clinical experience in hospital and private practice in diseases of the nose and throat, including a large number of cases, it seems evident to me that disease of the larynx and trachea of any description is not so frequently met with in New York, as the records of foreign, especially German and French, experience would lead us to believe. Neoplasms of the larynx are certainly not as frequently met with, either benign or malignant, as they are in Europe, or else they are given an undue prominence in foreign literature. While it may be true that benign laryngeal neoplasms exist in the proportion of 1 to 2½ per cent. of all laryngeal cases in this country, laryngeal affections in general are much less common than abroad. This personal opinion may not be sustained by the experience of other Americans, but there is reason to believe that I am not alone in the observation.

Various localities in the air passages have been mentioned as the most common situation of benign growths, but a careful perusal of literature



will, I think, show, notwithstanding considerable discrepancies of statement, that the most common place of development is on the vocal cords or at either commissure. \* It is conceded that their etiology depends largely upon irritation. Such being the case the places where we should naturally expect to find them would be the most mobile parts of the larynx and those parts most exposed to the irritation of air, dust and secretions. The subglottic space being the most protected and the most immobile part we should expect less morbid action there. This conforms to clinical observation. Of 1,100 cases, collected by von Bruns, of laryngeal neoplasms, 836 were on the vocal cords. Subglottic tumors are, however, of great rarity, nine only of Fauvel's 300 cases being infra-glottic.

The following history of a case which has lately come under my observation may not be lacking in interest and may at least illustrate some important points to remember in connection with subglottic growths.

M. C., a housemaid, æt. 20. Single; born in Hungary, came to the Demilt Dispensary in May 1890. Her family history was good. Three years ago she had been troubled with frontal headaches and pains in the bones which were worse at night. At that time she began to have a hoarse cough and some muco-purulent expectoration. Her nose was stopped up and she picked it making it sore inside. These symptoms increased. For the last year she had gradually

been growing short of breath on exertion, having, however, no difficulty while quiet except at times on severe coughing, of which she had several attacks each day. At times for the last year she had noticed some huskiness of the voice, but as a rule there had been no marked change in it. For the last three weeks she had been feeling weak and unfit for work. Specific history was denied.

*Examination:*—Pulse and temperature were normal. Respiration 24. She had slight stridor but no dyspnoea.

There was some enlargement of the cervical glands but no other evidence of specific disease.

On the left side of the nasal septum in front there was a papillary growth extending over the floor of the nose and to some extent over the anterior end of the inferior turbinated bone. It was covered with inspissated bloody mucus. There was marked thickening of the mucous membrane in the right nostril. The posterior border of the Vomer had also several wart-like growths, especially where it joins the base of the skull. There were two or three about the size of barley grains on the posterior surface of the soft palate.

Below the vocal cords there was a large congested looking mass which at first glance seemed to *block* the whole lumen of the trachea. During the greatest possible abduction of the vocal cords, however, it was seen that the base of the growth was attached to the left side of the cricoid cartilage and the tracheal rings, and projected to the

other side beyond, but considerably below the edge of the right vocal cord during quiescence. The surface looked uneven, covered with mucus, and as though it were very vascular (this proved otherwise however). The mucous membrane on the right side of the subglottic space was also seen to be thickened and roughened.

Her imminent danger was explained to the patient, who was somewhat incredulous, but who nevertheless promptly consented to enter the wards of Roosevelt Hospital.

For diagnostic purposes iodide of potash was given in increasing doses. After a few days signs of iodism appeared and the patient had suddenly almost fatal dyspnoea. A tracheotomy was done just below the cricoid cartilage, artificial respiration resorted to and the patient recovered.

Four days later, Dr. Frank Hartley made a long incision dividing the thyroid cartilage and several rings of the trachea, exposing the interior and the growth, which proved to extend downward for about  $2\frac{1}{2}$  inches below the vocal cords and to involve  $\frac{3}{4}$  of the circumference of the trachea at the point of greatest growth. It had all the macroscopic appearance of an ordinary papilloma. As soon as the trachea was opened the patient ceased breathing and it required energetic artificial respiration and hypodermic stimulation to start the natural respiration again. It was found impossible to resume the ether, although several attempts were made causing cessation of the breathing. Of course etherization was com-

menced through the tracheotomy tube and later given through a tube inserted at the lower angle of the tracheal wound. The operation was therefore finished under partial anæsthesia. The growth was found to be flattened by the pressure of the tracheotomy tube. It was cut away from its attachment, which included the under surface of the left vocal cord, by knife and scissors, the base and every vestige of suspicious looking mucous membrane, including the small growths on the right side, were thoroughly and deeply cauterized with the Paquelin cautery.

A tracheotomy tube was left at the lower angle of the wound, and the upper part of the trachea and the larynx was packed with iodoform gauze. The latter was removed in a few days and some weeks later the tube was withdrawn and the wound closed without any untoward symptoms, but she remained totally aphonic.

She was discharged from the hospital and again became an out-patient under my care. The growths were removed from her nose by cautery, snare, and forceps.

At the anterior laryngeal commissure was a pale, flabby growth about the size of a split pea. It was apparently a granulation nodule at the site of the thyrotomy incision. Failing with the forceps, this was destroyed by the galvano-cautery.

The patient was kept under occasional observation for six or seven months. Her voice did not return, but at the end of that time small ses-

sile growths began to appear just beneath the right vocal cord. A small portion of these was removed with the laryngeal forceps. Since then the patient has disappeared from view. There was no deterioration of the general health, although the patient naturally became somewhat hypochondriacal. The left vocal cord in the process of cicatrization was almost completely destroyed, at least as far as its usefulness in phonation was concerned.

Gerhardt has lately stated that the differential diagnostic point between syphilis of the trachea and tracheal cancer is that cough and signs of irritation do not occur in cancer as initial symptoms, dyspnœa being the first sign of trouble. In this case, which, however, was a benign tumor, it will be noted that a harsh cough preceded the dyspnœa by two years.

In fact, it is remarkable how little dyspnœa the patient suffered when her trachea was all but occluded by the growth. It was only on exertion, or from some temporary increase of mucus or transient congestion from coughing, that she experienced much discomfort. Such cases show how much larger than necessary for quiet respiration the trachea is, the extra size being Nature's supplementary device for emergencies — a device which makes violent and extraordinary exertion possible, and which renders simple inflammatory conditions all but harmless.

It illustrates a point too often forgotten in obstruction of the air passages, viz., that the

dyspnœa is most frequently due not so much to the mechanical stenosis as to the spasmodic or paralytic condition of the vocal cords, which irritation of the mucous membrane or compression or irritation of the nerve trunks may cause.

Intrinsic *laryngeal* tumors and extrinsic tumors pressing on the air passages, close alongside of which run the nerve filaments, may cause severe attacks of spasmodic dyspnœa, whatever the size or extent of the disease may be, while intratracheal disease rarely gives any dyspnœotic symptoms until the mechanical stenosis is very great.

Koch,<sup>1</sup> in his late article, said :

"If a tracheal tumor produces dyspnœa, that tumor is necessarily of large size, and of such a nature as to suffocate the patient at any moment. The laryngoscope gives us a defective idea of the size of the tumor on account of the inevitable shortening of the vertical diameter, while the intensity of the dyspnœa furnishes us with a more exact guide."

How suddenly, and with what little premonitory warning, an almost entire occlusion of the remaining air chink may take place, and the patient pass from comparative comfort into a condition rapidly terminating in suffocation is shown in this case, and in others of a similar nature. In dyspnœa caused by spasmodic contraction of the vocal cords — the dyspnœa of many cases of thoracic aneurism, of hysteria, of inflammation,

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<sup>1</sup> Koch : Ann. des mal de l'oreille, etc. Oct., 1890.

of *laryngeal* neoplasms—there is usually a certain leeway allowed for the performance of tracheotomy, because, as soon as insensibility from the carbonic acid poisoning occurs, the spasmodic action of the glottis is usually suspended, though this is not inevitably the case. The sufferer may then gradually return to consciousness, or at least get enough air to keep his heart going for a time. Purely mechanical obstruction, however, is a different matter.

Therefore, when the iodides are given for obstructive disease of the air-passages which may not be syphilitic, and even in cases where the diagnosis of specific disease is certain, especially when the obstruction is subglottic, it is well to remember that *slight* congestion is a very common sequel of even moderate doses, and that even slight congestion may prove disastrous if immediate surgical aid is not at hand.

More than half of all the cases of benign laryngeal neoplasms reported have been recorded as papillomata. It is very suggestive of insufficient pathological discrimination that there should be such a preponderance of this growth. As to the character of the growth in the case reported, you will see from a drawing of a microscopic section made by Dr. Hodenpyl that it consists essentially of a mass of lymphoid tissue covered by pavement epithelium, which dips down into its substance as digitations, and rises above the surface as papillæ. These papillæ, as well as the substance of the growth, have for a framework the



masses of lymphoid cells. There was more than the usual amount of fibrous tissue found in the ordinary so-called adenoid growths, though in the section from which this drawing is made it is not apparent.

If we regard this as a true tumor, the proper designation, according to the rules laid down by Virchow, would be "Lymphoma papillare." If, however, we are to accept the definition of a tumor, "that it is a non-inflammatory growth or new formation of tissue fulfilling no physiological purpose," this, as well as all so-called adenoid vegetations, should be designated as a papillary lymphoid hypertrophy. This is a question for histologists who are accustomed to arrange such matters to suit themselves, irrespective of clinical convenience and experience.

Lymphoma of the larynx, according to all authorities who mention it, is of the greatest rarity, as are many of the other benign forms of tumors, although they are common enough on other mucous membranes. This is probably due to the fact that in the larynx, as is the case in the bladder, morbid growths, either benign or malignant, are usually attended with the increase and hypertrophy, as well as the new formation of papillæ, on their surfaces.

Notwithstanding the protest of Virchow, and of many of the best histologists, these growths, when benign, are all classed under the head of "papillomata," whatever may be the predominant histological element in their structure.

This leads to great clinical confusion, and to a mistaken conception of the nature and pathogenesis of these growths.

The only records of so-called lymphoma of the larynx which I have met with are two cases, one referred to by Gottstein in his book, and another reported in the *Lancet* for October 15, 1887, by Beale; both of these accompanied general lymphomatosis. Wolfenden and Martin, however, in their brochure, "Studies in Pathological Anatomy," give a drawing of lymphoid hypertrophy, which they call lymphoma, and which occurred in the larynx independent of any general affection.

Notwithstanding this apparent rarity, I do not believe it can be so uncommon, but that some of these papillary tumors, if carefully examined, would be found to consist largely of lymphoid tissue. Sarcoma is also extremely rare in the trachea.

Such mistakes in nomenclature have been largely avoided in malignant tumors, owing to the importance of the prognostic aspects in such cases; but malignant tumors of the mucous membranes are quite as likely to be supplied with fungous or papillary surfaces as are benign growths, if not more so.

As observed above, it is rare that small tracheal growths come under observation, except where they coexist in the larynx. The question of treatment is in these cases frequently a puzzling one, and always an important consideration.

Those rare forms of tracheal gummata occasionally seen are of course to be treated by large doses of iodide of potash, and it may always be advisable, with proper precautions, to give the iodides where the diagnosis is not perfectly plain.

Leaving malignant tumors out of the question, and confining ourselves to the class of cases of which the one reported is a type, there are three methods of extirpation where interference is advisable :

1. Intubation with long O'Dwyer tubes.
2. Intra-laryngeal operations; by
  - a.* Forceps or snare.
  - b.* Cautery, either galvanic or chemical.
3. Extra-laryngeal operation.

The procedure by means of intubation is yet in its infancy, and is, of course, applicable only to those subglottic cases where the disease lies close beneath the vocal cords. Rapid absorption of benign and even syphilitic growths have been reported by Simpson and others. Intubation can probably be advantageously employed in connection with the intra-laryngeal use of the forceps or of the cautery. With this I have had no personal experience, but it is certainly deserving of a trial, the dangers and difficulties which attend other methods being absent or reduced to a minimum by intubation, and in event of failure, the toleration acquired from the intermittent use of a tube would be of the greatest advantage in intra-laryngeal operations.

The greatest difference of opinion prevails as to the proper cases for intra- and extra-laryngeal operations, some going so far as to urge an external operation even in supra-glottic tumors in adults, while others go to the other extreme by urging that even in children infra-glottic growths may be removed *per vias naturales*, cases having been reported where papillomata were removed from the fifth tracheal ring. The sanction of Fraenkel, of Berlin, to intra-laryngeal operations in cancer will not now be received with favor by the majority of laryngologists.

In tracheal growths, in the vast majority of cases, the tumor will usually be of such a size when first seen that nothing but an external operation would be advisable. In small, benign growths, in a tolerant adult, attempts by the intra-laryngeal method will often be met by the most brilliant immediate results even in the trachea, but recurrence will be frequent, because it is impossible to be sure that the growth is completely eradicated.

Where attempts are to be made in larger tracheal growths, through the natural passages, thorough preparation both of patient and attendants should be also made for an immediate external operation, because, in event of failure to remove the growth, enough congestion and inflammatory action may be set up to lead to complete tracheal occlusion.

The choice of instruments will depend largely on the personal bias and skill of the operator and the character of the growth. Personally, for small sessile growths, I prefer the white hot guarded galvano-cautery electrode. For growths which project more onto the lumen of the trachea, McKenzie's lateral or longitudinal forceps are preferable, with, however, more of a gradual

curve at the angle than is seen in the usual patterns.

Cauterization by chromic acid, although recommended by some of the most experienced operators, seems to me of inferior value, except to cauterize the base of a tumor removed by the forceps. When the epithelium is intact, these growths certainly are not as quickly destroyed by acids as by the actual cautery. (Of course, I speak principally from experience in other situations than the trachea.)

A very practical point in these intra-laryngeal operations is the way in which the patient reacts to the application of cocaine. In many patients it leaves nothing in the way of local anæsthesia to be desired. In others it seems impossible to produce satisfactory results with any safe dosage, this applying to the 20 per cent. strength as well as to weaker solutions. Cases are not rare where severe constitutional symptoms of the drug may appear before any practical local action is observed. It is at once the most useful and the most uncertain of drugs.

In considering the question of an external operation, the operator should be well satisfied of the impracticability of the operation by the natural passages. In many cases a preliminary attempt may be made by intra-laryngeal methods, and in event of failure, the external operation immediately done.

The dangers of the external operation are not only that to life, but also to the integrity of the voice. It is unnecessary to dilate upon the dangers of fatal pneumonia or bronchitis following the operation. This case illustrates a danger which is not satisfactorily explained, namely, the occasional prompt cessation of respiration or of the heart's action the moment the trachea is

opened. I have had two cases of tracheotomy where the heart was paralyzed at the moment of opening the trachea, although the pulse had been a moment before fairly good. There seems good grounds for the belief that there exist areas below the glottis, the excitation of which may profoundly affect the functions of the heart and lungs. It is possible that these areas may also exist outside of the trachea in the anterior cervical region. At any rate, there are enough cases on record to demonstrate that this operation has dangers beyond those usually ascribed to it.

In tracheal tumors there is the added danger of hæmorrhage from an incision of the tumor itself in opening the trachea. When a vascular tumor is attached to the anterior wall, this may cause very great embarrassment to the operator, and a fatal termination may ensue.

The danger to the integrity of the voice is of course not to be weighed in the balance with the patient's life, and should be entirely a secondary consideration. It is probable that the early writers have exaggerated this danger even in laryngeal growths. The simple separation one from another of the wings of the thyroid cartilage, bearing with them the attachments of the vocal cords, is probably a minor factor in the production of future aphonia or dysphonia. The danger comes from damage to the vocal cords themselves, and this may occur in endo-laryngeal operations as well. In the eradication of tracheal growths by an external operation, the division of the thyroid cartilage will usually be found necessary to gain room, and should not be omitted for fear of damage to the vocal apparatus.

A preliminary low tracheotomy is not a necessity, nor always of advantage, in spite of what Koch says at the end of his article, although in

some cases it may facilitate matters. It would be encroaching on the domain of general surgery to go further into the question of the technique of an external operation for these tracheal growths, suffice it to say that the indication is usually perfectly plain, and should be promptly met, as every moment of delay is fraught with danger to the patient.

In sections made from the fragments removed from the recurrence on the right side of the sub-glottic space, the microscopic appearance had more the resemblance of a small, round-celled sarcoma.

The difficulty in distinguishing lymphoid growths of the mucous membrane from small-celled sarcoma by microscopic examination is often very great. In the last year I have been puzzled in several cases, and submitted the sections to several experienced microscopists. In every instance I met with a diversity of opinion as to the character of the growth.

I have a number of such sections in my possession, and the similarity between the simple lymphoid growths and those which afterward proved to be malignant is striking.

In one case, I followed by repeated microscopic examinations of fragments removed at different times the course of a small, round-celled sarcoma of the nose. The first specimen was universally regarded as of a benign lymphoid character. It gradually changed in appearance to that of undoubted sarcoma, of the small, round-celled variety. The clinical history and situation made the diagnosis of sarcoma probable, even at first.

P. S.—Sept. 25, 1891.—I have recently seen the patient whose history is given above. There is no recurrence and she is in good health and spirits, though still aphonic.



